

**Appendix F**

***Federal Entities and Program Activities  
Relevant to WIST***

# Federal Entities and Program Activities Relevant to WIST

## OVERVIEW

This appendix expands on the Chapter 3 summaries for the federal partners in the Federal Committee for Meteorological Services and Supporting Research (FCMSSR)

Each section begins with a table for the entities within one federal department or independent agency. These tables identify each transportation sector of significant interest to each federal entity's constituent groups, or otherwise of significant interest to that federal entity. The following federal entities are represented:

- Department of Transportation
- Department of Energy
- Department of Defense
- Department of Commerce and the National Oceanic and Atmospheric Administration
- Department of the Interior
- Department of Agriculture
- Environmental Protection Agency
- Federal Emergency Management Agency
- National Aeronautics and Space Administration
- Nuclear Regulatory Commission
- U.S. Postal Service

## DEPARTMENT OF TRANSPORTATION

**DOT Role:** Policy and oversight for all transportation systems in the nation

The mission of the Department of Transportation (DOT) is to develop and coordinate national transportation policies that will provide an efficient and economical national transportation system, with due

regard for need, the environment, and national defense. The DOT is the federal entity with primary responsibility for shaping and administering policies and programs to protect and enhance the safety, adequacy, and efficiency of transportation systems and services. In addition, it promotes intermodal transportation.

The DOT includes the Office of the Secretary and 13 operating administrations, each headed by a presidential appointee. Among these administrations are the Federal Highway Administration (FHWA), National Highway Traffic Safety Administration (NHTSA), Federal Transit Administration, Federal Railroad Administration, Federal Aviation Administration (FAA), Maritime Administration, Saint Lawrence Seaway Development Corporation, Research and Special Programs Administration (RSPA), the U.S. Coast Guard, and the Transportation Security Administration (TSA). These operating administrations within DOT provide policy and oversight for all the modes of surface transportation covered by the WIST needs study (Table F-1).

“[T]he Act which I sign today is the most important transportation legislation of our lifetime ... It is one of the essential building blocks in our preparation for the future ... Transportation has truly emerged as a significant part of our national life. As a basic force in our society, its progress must be accelerated so that the quality of our life can be improved.”

President Lyndon Johnson, signing the act that established the Department of Transportation, October 15, 1966

**Table F-1** Interests of DOT Constituencies in Transportation Sectors

Department of Transportation	Transportation Sectors of Constituencies					
	Road	Rail	MTS	Pipeline	Transit	Airport Ground Ops
Federal Highway Administration	X					
Federal Transit Administration	X	X	X		X	
National Highway Traffic Safety Admin.	X	X				
Federal Railroad Administration		X				
Maritime Administration			X			
St. Lawrence Seaway Corporation			X			
U.S. Coast Guard			X			
Research & Special Programs Administration	X	X	X	X	X	X
Office of Emergency Transportation	X	X	X	X	X	X
Office of Hazardous Materials Safety	X	X	X	X		X
Office of Pipeline Safety				X		
Federal Aviation Administration						X
Center for Climate Change & Environ. Forecasting	X		X		X	
Transportation Security Administration	X	X	X	X	X	X

The DOT Office of the Secretary oversees the formulation of national transportation policy and promotes intermodal transportation. Other responsibilities are negotiation and implementation of international transportation agreements, assuring the fitness of US airlines, enforcing airline consumer protection regulations, issuance of regulations to prevent alcohol and illegal drug misuse in transportation systems, and preparing transportation legislation.

### Federal Highway Administration

The roads and highways of the United States are planned, built, and operated through a division of responsibilities between the federal government and the states. The FHWA has division offices in each state, and four regional resource centers, as well as a headquarters office in Washington, D.C. It performs its mission through two main programs:



Snow on the Washington, D.C., beltway. Courtesy Blaine K. Tsugawa, OFCM staff.

- The Federal-Aid Highway Program provides federal financial assistance to the states to construct and improve the National Highway System, urban and rural roads, and bridges. The program includes emergency relief to help states conduct emergency and permanent repairs of damage from natural disasters or catastrophic failures.
- The Federal Lands Highway Program provides access to and within national forests, national parks, the Tribal nations, and other public lands by preparing plans, letting contracts, supervising construction, and conducting bridge inspections and surveys.

With the exception of the roads served by the Federal Lands Highway Program and some private roads, U.S. roads and highways are built, maintained, and operated by state and local agencies and toll authorities. The FHWA develops regulations, policies, and guidelines for federal-aid funding, with the aim of achieving FHWA goals for mobility, safety, productivity, the human and natural environment, and national security.

The Federal-Aid Highway Program funds state highway research, but the FHWA also manages a national research, development, and technology program that includes the Intelligent Transportation System (ITS), through the ITS Joint Program Office. The work on Surface Transportation Weather Decision Support Requirements (STWDSR), including the Maintenance Decision Support System (MDSS), described in Section 1.3.1, is part of the ITS initiative (Nelson 2001, Mahoney 2001, NCAR 2002).

The FHWA delivers technical training, education, and assistance to its own staff and partners in areas of:

- Roadway and bridge design, construction, and maintenance

- Value engineering and other project and program evaluation tools
- Policy and planning
- Highway safety
- Intelligent transportation systems
- Environmental protection and enhancement
- Innovative financing
- Land acquisition
- Research, development, and technology transfer.

The research program generally seeks to advance the state of the art in transportation systems quality. The FHWA works with government, industry, and research-community partners to develop, test, and implement the latest technology. Because the FHWA is charged with coordinating highway transportation programs in cooperation with the states and other partners, it is helping to lead the effort to revolutionize road weather information in America. Much of this effort will have spin-off effects for improving weather information for many other modes of surface transportation.

The offices within the FHWA that are most relevant to weather issues are the Office of Operations and the Office of Research, Development and Technology. However, weather issues cut across the FHWA's programs, goals, and organizational units. This has made it vital, although difficult, to give weather information needs a focus within the agency.

#### *The Road Weather Management Program*

Various FHWA infrastructure and research programs have long been concerned with weather, particularly winter road maintenance. Although the mission of the FHWA does not include producing weather information, the linkages between general weather information and relevant threats to surface transportation ("road weather") spans the interests of meteorology and transportation. In 1997 the Rural ITS program began a focus on road-weather information. This effort has evolved into the Road Weather Management Program (RWMP) within the Office of Operations (Row 2001).

The Office of Operations, created in 1999, represents the increasing role of FHWA as a leader in improving state and local road operations in response to synoptic scale (e.g., hurricane) and smaller-scale weather threats. It also hosts the emergency operations component of the FHWA, which plays a federal coordinating role during national-scale disasters. The experience with Hurricane Floyd in particular has shaped RWMP activities aimed at augmenting the emergency management role of the state transportation departments. The RWMP is also working with the traffic management staff within the Office of Operations to improve ITS-based practices for preserving mobility and safety in more common, and smaller-scaled, weather threats. Issues concerning road weather information for travelers are dealt with elsewhere in the Office of Operations and in the ITS program generally.

The RWMP includes work on road-weather sensing related to prediction techniques, dissemination of road-weather information through ITS, the development of decision support

applications that use information on weather threats, and the improvement of transportation operations to respond to threats. The RWMP has taken the lead for the FHWA in interagency coordination concerning road-weather information. This coordination occurs directly with agencies like the National Weather Service (NWS) in the National Oceanic and Atmospheric Administration (NOAA) and through the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM). The RWMP brings the interests of its constituencies, primarily the state departments of transportation, to the interagency arena.

Winter road maintenance continues to be an RWMP focus. Through the STWDSR program, the RWMP is leading the FHWA activity in defining road-weather sensing requirements for integration with both ITS surveillance efforts and the national environmental observation system. In conjunction with the Office of Research, Development and Technology, the RWMP has been developing technology for sensing and treating winter road conditions. Among the RWMP efforts to develop and test advanced decision support systems for WIST users are the ATWIS and FORETELL projects, now operational in the Midwest, as well as the MDSS prototype development program (Section 1.3.1). Through the COMET program, the RWMP has sponsored five university-NWS-state research projects to improve deployment and application of road-weather sensors.

The RWMP has worked with the ITS Joint Program Office to define the flows of weather and related data in the National ITS Architecture (Section 1.3.1). This effort includes developing the ITS user service for Maintenance and Construction Operations and integrating weather data standards into Version 4 of the National ITS Architecture. Because the construction and operational interests of the FHWA are mostly indirect, the FHWA controls no large operating or project funds, comparable to programs of the FAA, NWS, or Department of Defense (DoD). However, the RWMP works through the interagency coordination process to bring the requirements of the ITS into meteorological information systems and observing platforms.

#### *Climate Information and its Relevance to Surface Transportation*

Interests in road weather differ, within the FHWA and elsewhere in the DOT, depending on the temporal and spatial scales of weather information. Climate information is most relevant to infrastructure planning and the long-range management of operations resources. The Office of Planning and Environment is the FHWA unit that works most closely with the DOT Center for Climate Change and Environmental Forecasting, which focuses on climate issues and their impacts on the surface transportation system, such as long-term highway inundation.

#### **Federal Transit Administration**

The Federal Transit Administration, through its funding program, assists in developing improved mass transportation systems for cities and communities across the country. Beyond typical bus and rail systems, it supports other forms of public transportation, including commuter ferryboat, trolleys, and people movers. A wide range of technical and planning assistance helps transit agencies' to develop their service operations, building and construction, capital investments, and joint development efforts. Through its technology programs, the Federal Transit Administration supports research on intelligent transportation systems, alternative fuels, and new communication technologies. System-wide applications of advanced new technologies have contributed to transit

agencies becoming more integrated with other transportation and information networks, while also increasing access, cost-effectiveness, and convenience. Other programs play a significant role in helping to minimize air pollution and single-occupant vehicle traffic in congested urban environments. Programs and technologies such as the Bus Rapid Transit Initiative and communication-based train control are improving the viability of transit services in meeting current and future needs of the traveling public. Across the nation, the Federal Transit Administration is helping to create neighborhoods that are more amenable to transit and pedestrian travel, ultimately enhancing the quality of life and making communities more livable.

### **National Highway Traffic Safety Administration**

NHTSA is responsible for reducing deaths, injuries, and economic losses resulting from motor vehicle crashes. It sets and enforces safety performance standards for motor vehicles and equipment. Through grants to state and local governments, it enables them to conduct effective local highway safety programs. The statistics on highway accidents, including injuries and economic consequences of accidents, cited in this and most other WIST-related reports originate from NHTSA databases.

NHTSA investigates safety defects in motor vehicles; sets and enforces fuel economy standards; helps states and local communities reduce the threat of drunk drivers; promotes the use of safety belts, child safety seats, and air bags; investigates odometer fraud; establishes and enforces vehicle antitheft regulations; and provides consumer information on motor vehicle safety topics. It also conducts research on driver behavior and traffic safety, to develop the most efficient and effective means of bringing about safety improvements

### **Federal Railroad Administration**

The Federal Railroad Administration promotes safe and environmentally sound rail transportation. With its responsibility for ensuring railroad safety throughout the nation, it employs safety inspectors to monitor railroad compliance with federally mandated safety standards, including track maintenance, inspection standards, and operating practices. The Federal Railroad Administration conducts tests to evaluate research and development projects that support its safety mission and enhance the railroad system as a national transportation resource. It also administers public education campaigns on highway–rail grade crossing safety and the danger of trespassing on railroad property.



Railroad bridge washed out by hurricane flooding.

## Maritime Administration

The Maritime Administration promotes development and maintenance of an adequate, well-balanced, U.S. merchant marine, sufficient to carry the nation's domestic waterborne commerce and a substantial portion of its waterborne foreign commerce. The merchant marine can serve as a naval and military auxiliary in time of war or national emergency. The Maritime Administration also seeks to ensure that the United States enjoys adequate shipbuilding and repair service, efficient ports, effective intermodal water and land transportation systems, and reserve shipping capacity in time of national emergency.

## Saint Lawrence Seaway Development Corporation

The Saint Lawrence Seaway Development Corporation operates and maintains a safe, reliable and efficient waterway for commercial and noncommercial vessels between the Great Lakes and the Atlantic Ocean. In tandem with the Saint Lawrence Seaway Authority of Canada, it oversees operations safety, vessel inspections, traffic control, and navigation aids on the Great Lakes and the Saint Lawrence Seaway.

## U. S. Coast Guard

The Coast Guard ensures safe and secure transportation on America's waterways and protection of the marine environment. The Coast Guard's job of ensuring maritime safety and security will become even more challenging in the years ahead, driven by three transportation trends. First, domestic and ocean-borne trade and cruise ship demand are poised for explosive growth in the size and number of ships plying inland, coastal, and deepwater waterways. Second, fishing vessels and offshore platforms venture farther offshore in search of the sea's bounty. Third, a dramatic increase in personal watercraft and recreational boating is driving ever greater congestion on the nation's waters. Prevention, founded on expert risk assessments to reduce the probability of mishaps, will be the watchword of the future. Advanced technologies will continue to be embraced to increase the probability of success of the Coast Guard mission.

Among the Coast Guard's weather related duties is participation in the International Iceberg Patrol, which aims to provide safe navigation in the northwest Atlantic Ocean by monitoring the location and movement of icebergs.

A sinking tanker leaking oil.  
Photo courtesy NOAA Photo  
Library.



## Research and Special Programs Administration

The RSPA oversees rules governing the safe transportation and packaging of hazardous materials by all modes of transportation, excluding bulk transportation by water. It also assists local and state authorities with training for hazardous materials emergencies. Research and development play a major role in RSPA's mission. In addition, RSPA operates the Volpe National Transportation Systems Center in Cambridge, Massachusetts, which is dedicated to enhancing the effectiveness, efficiency, and responsiveness of other federal organizations with critical transportation-related functions. Three entities within the RSPA have special relevance to WIST needs and applications: the Office of Emergency Transportation, Office of Hazardous Materials Safety, and Office of Pipeline Safety.

### *Office of Emergency Transportation*

Transportation is a vulnerable lifeline, but during and after disasters it becomes essential for helping a community recover and restore its economy. To provide a centralized, effective program, the Office of Emergency Transportation performs coordinated crisis management functions for multimodal transportation emergencies. An emergency may result from:

- Natural disasters
- Technological incidents and accidents
- Labor strikes
- Security situations, such as domestic criminal acts or acts of terrorism
- National defense mobilization.

Extreme weather falls under the category of natural disasters. Adverse weather events in this category include hurricanes, tornadoes, major flooding, and similar events that cause disruptions in transportation systems for which coordinated crisis management is required. Preparation and training for emergency events include exercising every component of the team and every aspect of the plan, so that surprises will be minimal when critical decisions must be made and implemented. The Office of Emergency Transportation also works with other federal and state agencies to ensure relationships are in place before the stress of disaster response begins.

Activities within the Office of Emergency Transportation include:

- Managing the DOT Crisis Management Center to collect, analyze, and disseminate critical transportation infrastructure information to senior DOT officials, and to ensure that communications and other equipment are ready at any time
- Managing the Alternate Relocation Site for core DOT functions so that the Department can continue to work even if the headquarters is unusable
- Developing and continually revising and testing plans and procedures to meet new threats and take advantage of new technology and other advances
- Training DOT staff for disaster functions that are essential but not performed frequently.

### *Office of Hazardous Materials Safety*

The mission of the Office of Hazardous Materials Safety is to promulgate a national safety program that will minimize the risks to life and property inherent in commercial transportation of hazardous materials. The functions of the Office of Hazardous Materials Safety fall into five categories: regulatory development, enforcement, training and information dissemination, domestic and international standards, and interagency cooperative activities. The standard form used by the Office to report a transportation incident includes questions on weather conditions at the time of the incident, such as precipitation, pavement condition, winds, or sun glare.

Weather events affect the transportation of hazardous materials in two ways. First, exposure to specific kinds of weather may increase the vulnerability of hazardous materials in transit. Second, weather and related condition can affect the consequences of a release of hazardous materials through atmospheric dispersion, water contamination, and other routes.

### *Office of Pipeline Safety*

The Office of Pipeline Safety administers the DOT's national regulatory program to ensure the safe transportation of natural gas, petroleum, and other hazardous materials by pipeline. It develops regulations and other approaches to risk management, to assure safety in design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Pipeline safety standards are established and maintained by the Office of Pipeline Safety to ensure public safety and environmental protection from gas and hazardous liquids transported by pipeline.

Various types of weather phenomena can be listed as causal events in the standard form used by the Office of Pipeline Safety for reports of accidents and incidents involving natural gas or hazardous liquid pipelines. A section on the form called "Apparent Cause" lists "Natural Forces" as a subsection, with four types of weather events among the list of choices: lightning, heavy rains/floods, temperatures, and high winds. Heavy rains are further categorized by their effects (washouts, flotation, scouring, other). Temperature as a cause is also further categorized as thermal stress, frost heaves, frozen components, or other.

### **Federal Aviation Administration**

The FAA oversees the safety of civil aviation. The agency is responsible for certification of airports serving air carriers. It also regulates a program to protect the security of civil aviation and enforces regulations under the Hazardous Materials Transportation Act for shipments by air. In addition to operating a network of airport towers, air route traffic control centers, and flight service stations, the FAA develops air traffic rules, allocates the use of airspace, and provides security control of air traffic to meet national defense requirements.



Holman Field, St. Paul, Minnesota, flooded by the Mississippi River, April 2001. Copyright AP Wide World Photos.

At air terminals, the FAA is responsible for coordinating or controlling operational movements on the ground. This responsibility includes movement of aircraft, freight vehicles, baggage movers, and support equipment such as fuel, food, and maintenance vehicles.

The FAA supports the collection of weather information for aviation and for all other weather services and databases through a large number (767) of automated observing systems. It also continues to fund contracts for human weather observers (198) at critical locations. It also supports R&D on aviation weather, to ensure the safety, capacity, and efficiency of the national aviation system.

### **Center for Climate Change and Environmental Forecasting**

The Center for Climate Change and Environmental Forecasting was established within DOT in 1999 to coordinate Departmental strategies and policies for mitigating transportation's contribution to greenhouse gas emissions and assessing the effects of climate change on the transportation system. The Center functions as a DOT-wide virtual organization, led by a steering committee composed of senior executives from nine of the DOT operating administrations and the Office of the Secretary. This cross-modal, virtual structure helps to ensure strong participation throughout the Department, while avoiding unnecessary administrative and institutional costs. The operating administrations support the Center's work through contributions of funds, staff, and technical expertise. They participate in the Center's efforts to share information, build partnerships, and coordinate activities related to climate change.

The Center sponsors several projects including the following:

- **Impacts of Climate Change on Transportation.** The Center is undertaking a series of research projects to assess how short and long term changes in climate could affect transportation, and how transportation decision makers could address these possible impacts.
- **Fuel Options.** This study compares the energy use, emissions of greenhouse gases and criteria pollutants, and cost-effectiveness of current and alternative fuels for light-duty and heavy-duty highway vehicles.
- **Transportation Greenhouse Gas Data and Modeling.** This study analyzes data and models being used to improve understanding of greenhouse gas emissions from the transportation sector and the implications of policy options.

### **Transportation Security Administration**

The TSA was established by Public Law 107-71 following the terrorist attacks of September 11, 2001. Its primary objective is to stop terrorist incidents before they can be implemented. When fully operational, the TSA will have thousands of federal law enforcement, security, and regulatory employees at 429 airports across the country. Although protecting the traveling public in airports and on airplanes may be the most visible responsibility of the TSA, it also has lead responsibility for security of the nation's highways, waterways, seaports, railways, public transit,

and pipelines (DOT 2002). Thus, all the surface transportation sectors studied for this WIST report are within its purview.

Weather conditions have direct and indirect implications for the mission of the TSA. First, as in any emergency response situation, weather conditions may influence the ability of responders to a homeland security incident. Second, prevailing and forecast conditions can be critical to effective response and recovery, if an attack disperses a chemical, biological, or radiological hazard. Third, heightened security measures after September 11 may increase the impact of adverse weather on the efficiency and effective capacity of transportation systems (e.g. bridge and facility entrances) or intermodal connections (e.g. airport parking lots and passenger terminals, seaport-to-rail/roadway carrier links).

## DEPARTMENT OF ENERGY

The mission of the Department of Energy (DOE) is to foster a secure and reliable energy system that is environmentally and economically sustainable, to be a responsible steward of the nation's nuclear weapons, to clean up its own facilities, and to support continued United States leadership in science and technology.

**DOE Role** (Table F-2): Transportation of nuclear materials, through its National Transportation Program, and repair crew access to electric transmission lines.

A large part of the work performed by the DOE and its partners is the safe management of nuclear materials and permanent disposal of the nation's radioactive wastes. This work includes packaging, *transporting*, and storing these hazardous materials.

**Table F-2** Interests of DOE Constituencies in Transportation Sectors

Department of Energy	Transportation Sectors of Constituencies					
	Road	Rail	MTS	Pipeline	Transit	Airport Ground Ops
National Transportation Program	X	X	X			X
Power Marketing Administrations	X					

DOE's packaging and transportation activities are performed through program offices, which provide policy direction and program oversight. Materials transported in these activities range from weapons components and subassemblies to spent fuel, special nuclear materials, and radioactive or otherwise hazardous waste materials. Field offices are responsible for detailed planning for shipments and for full regulatory compliance. They also serve as focal points for local public and stakeholder interactions.

DOE ships its materials by all modes of transportation, using both commercial and private carriers. In FY 1997 the distribution by sector was 77 percent by air, 22 percent by roadway (motor carrier), and less than 1 percent by rail. In FY 1997, DOE transported 430,000 shipments of non-defense-related materials, consisting of 412,000 (96 percent) nonhazardous shipments and 18,000 shipments (4 percent) of hazardous materials. Of the latter, 5,200 were radioactive. Although shipments of radioactive materials were thus only 1.2 percent of all DOE shipments, DOE ships 75 percent of all curies (a measure of radioactivity) transported in the United States.

## National Transportation Program

The National Transportation Program (NTP), which is DOE's corporate center for packaging and transportation expertise, is located and managed within the Office of Environmental Management. The NTP supports infrastructure and coordinates transportation activities for all nonclassified shipments of hazardous materials, including radioactive materials, mixed wastes, and commodities such as coal, other fuels, maintenance materials, and supplies.

The NTP is responsible for ensuring the availability of safe, secure, and economical transport services; consistency in regulatory implementation; and coordinated outreach and emergency preparedness assistance for DOE programs. The NTP develops and provides training on transportation and packaging management and safety, including domestic and international regulations, guidance, and standards.

## Federal Energy Corporations—The Power Marketing Administrations

The Power Marketing Administrations (PMAs) are power utilities that are agencies of the DOE. Their role is to sell, in the wholesale market, electric power and associated energy produced at federal dams (and some nonfederal power plants). By law, the power is marketed to publicly held entities such as rural electric cooperatives and municipal utilities first, followed by commercial or industrial customers within the region. Any remaining surplus power is sold to customers outside the region. The regions for four of the PMAs are shown in Figure F-1. The fifth PMA is the Alaska Power Administration.

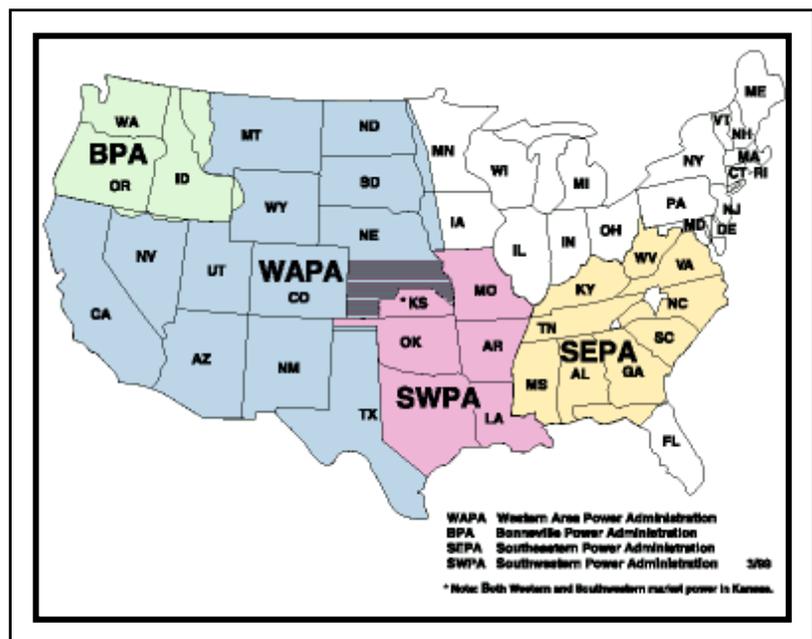
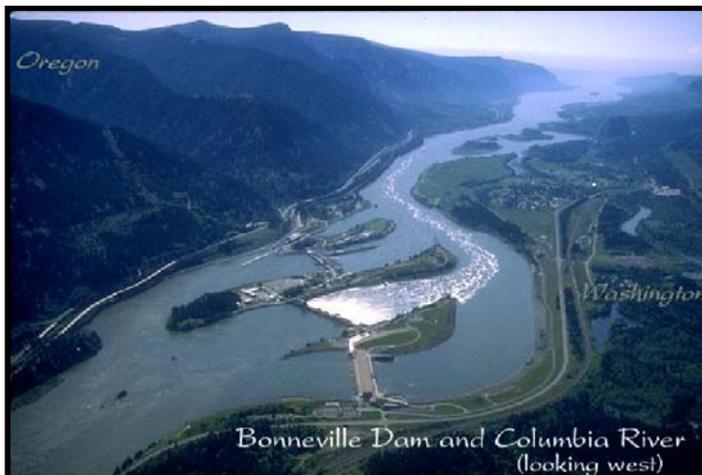


Figure F-1 PMA Regions.

The PMAs have a significant need for weather information, although most of it is required for managing water resources and long-term planning of power production. Within the scope of the WIST study, the information needed is mostly limited to weather elements that affect the ability of repair crews to service power transmission lines. Consequently, the WIST needs of the PMAs are similar to those of other utilities operating a fleet of repair trucks, such as telephone or cable TV companies. Those needs focus on weather elements such as freezing rain, deep snow, and other precipitation impacts.

The **Bonneville Power Administration**, with headquarters in Portland, Oregon, covers the Pacific Northwest. It markets the wholesale electric power produced at 29 federal dams located

in the Columbia–Snake River Basin, as well as the power from one nonfederal nuclear plant. Like all the PMAs, Bonneville does not own or operate any federal dams. It only sells the power produced by these facilities. Two other federal entities, the U.S. Army Corps of Engineers and the Bureau of Reclamation, operate the dams whose electric energy output is sold by this PMA. The nuclear plant is owned by the Washington Public Power Supply System, a consortium of utilities.



Bonneville Dam, one of the sources of power marketed by the Bonneville Power Authority. Photo courtesy Bonneville Power Authority.

Today the Bonneville Power Administration sells about 46 percent of the electric power consumed in the northwestern United States. To deliver that power, it owns and operates one of the largest high-voltage electrical transmission systems in the world, with 15,000 miles of power lines, constituting about three-fourths of the region's high-voltage electric grid.

The **Southeastern Power Administration**, headquartered in Elberton, Georgia, markets the electric power and energy generated at hydroelectric dams operated by the U.S. Army Corps of Engineers in the southeastern portion of the United States. Because this PMA does not own transmission lines, it contracts with other utilities to provide transmission, or "wheeling" services, for its power.

The **Southwestern Power Administration**, which has its headquarters in Tulsa, Oklahoma, is responsible for marketing the hydroelectric power produced at 24 U.S. Army Corps of Engineers multipurpose dams located in Arkansas, Missouri, Oklahoma, and Texas. This PMA operates and maintains 1,380 miles of high-voltage transmission lines, 24 substations, and 46 microwave and VHF radio sites.

The **Western Area Power Administration** has its headquarters in Lakewood, Colorado. It markets and delivers power and related services from 55 hydroelectric plants within a 15-state region of the central and western United States. These plants are operated by the Bureau of Reclamation, U.S. Army Corps of Engineers, or the International Boundary and Water Commission. This PMA operates and maintains a transmission system with more than 16,800 miles of transmission lines, as well as 256 substations and other related facilities.

## DEPARTMENT OF DEFENSE

In addition to being a consumer of transportation weather information, the DoD is also one of the nation's principal producers of weather information. Both the Air Force and the Navy have weather observation and prediction as elements of their mission. The Air Force provides the weather information required by the combat forces of the Air Force and the Army. The Navy provides weather information for Navy and Marines Corps forces.

**DoD Role** (Table F-3): The U.S. Transportation Command (USTRANSCOM), through its Army component Military Traffic Management Command (MTMC), has a major interest in surface transportation (rail, road, and port operations). While the MTMC is responsible for road and rail transportation, the U.S. Army Corps of Engineers is responsible for waterways. The Navy is responsible for open water routes. All of the services have airport ground operations. The Defense Logistics Agency and the Defense Energy Support Center are responsible for pipelines.

**Table F-3** Interests of DoD Constituencies in Transportation Sectors

Department of Defense	Transportation Sectors of Constituencies					
	Road	Rail	MTS	Pipeline	Transit	Airport Ground Ops
U.S. Transportation Command	X	X	X		X	X
Military Traffic Mgmt Command	X	X	X		X	X
U.S. Air Force	X					X
U.S. Navy	X		X			X
Defense Logistics Agency				X		

### U.S. Transportation Command

The mission of the U.S. Transportation Command (USTRANSCOM) is to provide air, land, and sea transportation for the DoD both in times of peace and in war. It has been designated the single manager of the Defense Transportation System. Strategic mobility is the instrument that allows the United States to act upon the world stage at whatever level is chosen by the national leadership. The potential range of regional threats in the next 20 years is so broad that no single scenario can be identified as an adequate basis for planning. Current U.S. military strategy calls for more military forces to be based in the continental United States, with a reduced forward presence overseas. With fewer U.S. forces stationed overseas, the nation must increase its capability to project military power abroad. USTRANSCOM must continue to strengthen and improve all facets of strategic mobility and must be ready to react on a moment's notice. The ability to project power worldwide rapidly depends on increased airlift capability, additional prepositioning of heavy equipment afloat and ashore, increased surge sealift capacity, and improved readiness and responsiveness of the Ready Reserve Force.

### Military Traffic Management Command

The mission of the MTMC, the Army component of USTRANSCOM, is to support DoD and the mobilization community worldwide during peace and war with responsive planning, crisis response actions, traffic management, terminal operations, integrated transportation systems, and

deployability engineering. As USTRANSCOM's overland lift component and primary traffic coordinator, the MTMC has assets and equipment comprising more than 12,000 containers, more than 1,350 rail and tank cars, and 142 miles of government-owned railroad track. The MTMC contracts with commercial transportation resources to provide additional transportation capabilities.

With the help of these commercial industry partners, it accomplishes its mission with 2,355 active duty and reserve military members, as well as Department of the Army civilians, stationed around the world. These professionals come from all branches of the Armed Forces: Army, Navy, Air Force, Marines, Coast Guard, and the Canadian Armed Forces. This personnel strength almost doubles during mobilizations, when Reserve Component units augment the regular service personnel.

### **U.S. Air Force**

The mission of Air Force Weather is to provide timely, accurate, and relevant mission weather and space environmental information to meet Air Force, Army, Joint, and other defense and intelligence community needs worldwide. These needs include weather support to surface transportation and airfield ground operations worldwide. To accomplish its mission, Air Force Weather executes five core processes: data collection, analysis, forecasting, tailoring, and dissemination. On a global scale, it leverages the numerical weather prediction capabilities of the U.S. Navy and the NWS. It also supports global meteorological satellite applications as the DoD Meteorological Satellite Center of Excellence. For regional scale information down to "mission scales," it exploits meteorological satellites and a suite of models, including the community-developed MM5 mesoscale model, to produce fine-scale weather forecasts for the gamut of aviation and ground activities.

Air Force Weather provides space environmental support for DOD operations. This support is increasingly important within the DOD, as space operations become critical to supporting warfighting operations. Space weather events can affect key military capabilities such as radio communications (HF and UHF), satellite operations, space object tracking, high-altitude flights, radar operations, and the Global Positioning Satellite system.

To meet this spectrum of requirements, Air Force Weather activities are organized across the breadth of military operations, from strategic to operational and tactical levels. The Air Force Weather Agency (AFWA) is the primary strategic center providing global and other large-scale support to strategic customers and Operational Weather Squadrons around the world. As an example, AFWA provides gridded precipitation information to the Army Corps of Engineers to support waterways management. To mitigate the impacts of space weather on DOD and national systems, AFWA also provides space weather observations, forecasts, alerts and warnings, and tailored products. It ensures that information on the space environment is available for warfighters and decision makers at strategic, operational, and tactical levels.

The Air Force Combat Climatology Center, a strategic center under AFWA, provides climatological support including engineering weather data for applications such as road building and simulation support for development and testing of surface transportation systems. The eight Operational Weather Squadrons provide regional forecasting services, warnings, and advisories

to protect life and resources and preserve operational capability. These units produce information products tailored for use by Combat Weather Teams, which provide direct support to Air Force and Army operations at the tactical level. Combat Weather Teams provide surface weather decision information for the movement of personnel, equipment, and weapons on and around Air Force and Army installations, as well as for operations en route to and from airports and sea ports. They produce information products that are highly tailored to individual missions and activities. They also provide weather information vital to safe and efficient ground operations on airfields.

## U.S. Navy

The Navy has the military requirement to provide meteorological products and services to support Navy, Marine, and Joint forces. It also provides oceanographic support to all elements of the DoD. The information is used to protect ships, aircraft, fighting forces, and shore establishments from adverse ocean and weather conditions, as well as to provide tactical or strategic advantage in exploiting the physical environment during military or humanitarian operations.

Operational support within the Navy is provided by elements of the Naval Meteorology and Oceanography Command. Navy meteorology and oceanography organizations collect observations ashore, afloat, and through remote sensors, worldwide. They also are involved in assimilating and processing these observations on a global basis to support analysis and forecasting throughout the world. Environmental data are acquired through links with distribution systems for conventional and remotely sensed data, operated by DoD or NOAA.

The Fleet Numerical Meteorology and Oceanography Center in Monterey, California, provides global, regional, and tactical observations, analysis, and coupled air–ocean forecasts. The Naval Oceanographic Office, located at Stennis Space Center, Mississippi, processes and distributes oceanographic, hydrographic, and other geophysical data and products. It is the Navy’s primary processing facility for data from NOAA polar-orbiting satellites and the national “core processing center” for sea-surface temperature measurements derived from satellite data.

Worldwide theater and regional support is provided to forces ashore and afloat through six regional centers delivering meteorological and oceanographic services within their broad areas of responsibility. Specific products common to the regional centers include warnings of high winds and seas for the world’s oceans, tailored forecast support for Navy, Coast Guard, and NOAA ships at sea, and ship routing services for ocean transits.

The Naval Ice Center, located in Suitland, Maryland, provides tailored ice forecasts and analyses to the DoD. The Navy, through this center, operates the National Ice Center jointly with NOAA and the Coast Guard. The National Ice Center provides ice analyses and forecasts for the Arctic and Antarctic regions, coastal United States waters, and the Great Lakes to civilian and military operations.

Facilities of the Naval Meteorology and Oceanography Command—located at Whidbey Island, Washington; Naples, Italy; and Jacksonville and Pensacola, Florida—provide aviation forecast services, as well as Fleet Operating Area and local forecasts and warnings. These services and

products are used by aircraft, ships, submarines, and naval bases and staffs. The command also has 31 detachments worldwide. These detachments are primarily situated at naval air stations for aviation safety of flight forecasting, although several are located at naval stations in support of sea-going units. They provide meteorological and oceanographic forecasting and warning services to the DoD and allied units within their local and functional areas of responsibility. Detachments and facilities within the continental United States use numerical weather prediction products from both the Navy and NOAA's National Centers for Environmental Prediction. Overseas detachments and facilities use Navy numerical products, in addition to Air Force and foreign products.

The Navy also has permanent meteorological and oceanographic assets aboard aircraft carriers, major amphibious ships, and command ships. Their primary objectives are safety of ships, aircraft, and embarked personnel; optimum tactical and planning support to onboard warfare commanders; and tailored on-scene products and services for the assigned task force, task group, or allied units in joint, combined, or coalition military and humanitarian operations.

The Navy and Air Force have long cooperated in providing weather support for the DoD. These efforts have led to successes such as the Defense Meteorological Satellite Program and the Joint Typhoon Warning Center, which is operated jointly by the Navy and Air Force and located at Pearl Harbor, Hawaii. Similarly, the Navy and NOAA have a history of cooperative efforts, which increase efficiency and benefit both the Navy and NOAA. All three agencies continue to identify new areas of cooperation

## DEPARTMENT OF COMMERCE AND THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

**DOC Role** (Table F-4): NOAA's National Ocean Service and NOAA Corps are primarily consumers of weather information., although some facilities provide oceanographic and meteorological observations. NOAA's NWS is the principal provider of weather information for the nation.

The role of the Department of Commerce (DOC) is to promote job creation, economic growth, sustainable development and improved living standards for all Americans. The DOC accomplishes these objectives through its various component agencies and by working in partnership with business, universities, and

communities. The National Oceanic and Atmospheric Administration (NOAA) is the DOC's primary agency for weather data.

NOAA is dedicated to predicting environmental change and protecting the environment. It uses environmental assessment and prediction to observe and analyze the state of the environment, while protecting public safety and the nation's economic and environmental security through accurate forecasting. Second, it practices environmental stewardship to protect ocean, coastal, and living marine resources and enable sustainable development in the coastal zone.

NOAA provides its services through five major divisions and numerous special program units. The major divisions are NOAA's National Ocean Service, National Marine Fisheries Service, Office of Oceanic and Atmospheric Research, National Weather Service, and National

Environmental Satellite Data and Information Service. NOAA also includes the nation's seventh, and smallest, commissioned service, the NOAA Corps. The commissioned, uniformed officers of the NOAA Corps are scientists and engineers who operate and manage NOAA's fleet of research ships and aircraft.

**Table F-4** Interests of DOC Constituencies in Transportation Sectors

Department of Commerce, National Oceanic and Atmospheric Administration	Transportation Sectors of Constituencies					
	Road	Rail	MTS	Pipeline	Transit	Airport Ground Ops
NOAA's National Ocean Service			X			
NOAA Corps			X			
NOAA's National Weather Service	X	X	X	X	X	X

### NOAA's National Ocean Service

As the nation's principal advocate for coastal and ocean stewardship, NOAA's National Ocean Service develops the national foundation for coastal and ocean science, management, response, restoration, and navigation. It provides nautical charting products for safe navigation to the marine community and conducts research on the health of the coastal environment. Both activities contribute to healthy coastal economies. The coastal ocean, which includes the coasts, bays, estuaries, and the Great Lakes, is economically, politically, and socially critical to the nation. Coastal communities are hubs of commerce and home to many major American corporations, ports, and transportation networks. NOAA's National Ocean Service works to find innovative ways to provide information, tools, and techniques that will reduce the vulnerability of these communities to storms, tsunamis, harmful algal blooms, fish kills, marine mammal strandings, and other coastal hazards. It establishes coastal preparedness plans, educates the public about coastal hazards, and develops tools, such as geographic information systems, to help communities plan for and respond to coastal hazards. This agency also provides scientific expertise during operations to clean up oil and hazardous chemical spills and works to restore marine areas harmed by pollution or other damage.

#### *Support to the Marine Transportation System*

NOAA's National Ocean Service supports the MTS with a variety of navigation and environmental services. NOAA activities authorized by the Coast and Geodetic Survey Act of 1947 and the 1998 Hydrographic Services Improvement Act include programs for Mapping and Charting, Hydrographic Surveys, Geodesy, and Tide and Current Data. These programs are the backbone of the MTS information infrastructure. In addition to promoting safe and efficient maritime commerce with its navigation services, NOAA issues marine weather forecasts, conducts satellite-aided search and rescue tracking with the Coast Guard and other partners, and facilitates sound port development. NOAA also supports an environmentally friendly MTS by conducting waterway risk assessments to aid port planning, organizing spill preparedness and response activities, and promoting fisheries management and habitat restoration. These activities form a comprehensive and effective program supporting the future of the MTS.

## *Marine Modeling and the Marine Transportation System*

Predicting water levels accurately requires forecast models that incorporate weather information. NOAA's National Ocean Service provides real-time observations on water levels, tides, and currents to support the MTS and safe, efficient use of the nation's ports. NOAA merges these oceanographic data with marine meteorological data from the NWS to develop models for nowcasts and forecasts of water levels and conditions important for maritime commerce and safe navigation.

NOAA data on water levels can help move ships in and out of port as quickly as possible, and as fully loaded as safety permits. A few more inches of draft can mean additional thousands to millions of dollars to a shipper. Loading additional cargo can take many hours, and it may take anywhere from two to eight hours for a ship to leave a port and reach the ocean. To maximize cargo loads, mariners need to know what the underkeel clearance will be, from 6 to 24 hours in the future. Ships coming into port use the NOAA sensor data and models to time their arrival for the best underkeel clearance conditions, without wasting fuel by having to wait outside a bay or port entrance for adequate conditions.

### **NOAA Corps**

The NOAA Corps is the smallest of the seven uniformed services of the United States. The service, consisting of approximately 300 commissioned officers, is an integral part of NOAA. It provides a cadre of professionals trained in engineering, earth sciences, oceanography, meteorology, fisheries science, and other related disciplines. Officers operate research and survey ships, fly "hurricane hunter" research aircraft into nature's most turbulent storms, lead mobile field parties, manage research projects, conduct diving operations, and serve in staff positions throughout NOAA. The ranks within the NOAA Corps are the same as the U.S. Navy, from ensign to rear admiral (upper half).

### **NOAA Marine and Aviation Operations**

NOAA operates a wide assortment of vessels to conduct hydrographic surveys, oceanographic research, and fisheries research. These vessels, which operate under NOAA Marine and Aviation Operations, are commanded by NOAA Commissioned Officers and crewed by wage marine civilians. The wage marine personnel include licensed masters, mates, and engineers and unlicensed members of the engine, steward, and deck departments. In addition, survey and electronic technicians operate and maintain the ship's mission, communication, and navigation equipment. The ship's officers and crew provide mission support and assistance to embarked scientists from various NOAA laboratories and the academic research community.

### **NOAA's National Weather Service**

The NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, and adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. The NWS has a national infrastructure in place to gather and process data from the land, sea, and air. These data come from familiar technologies, such as weather radars and satellites, but also from less-familiar technologies, including data

buoys for marine observations and surface observing systems for data that help the aviation industry.

The NWS maintains a constant vigil to provide warnings and forecasts of hazardous weather, including thunderstorms, flooding, hurricanes, tornadoes, winter weather, tsunamis, and climate events. It is the sole *official* federal voice for issuing warnings during life-threatening weather situations. The NWS broadcasts life-saving information to the public during severe weather events and other hazardous situations through the NOAA Weather Radio network. In addition, the NWS relies on its partners in emergency management and the media to disseminate warnings on severe weather and critical forecasts. With a massive modernization effort just completed (Section 1.3.1), NWS is increasing the accuracy of forecasts and warning times, giving communities more time to prepare for severe weather.

Weather services provided by NWS cost each American about \$4 a year. This investment allows the NWS to issue more than 734,000 forecasts (fire weather, public, aviation, and marine) and 850,000 river and flood forecasts annually. Each year, NWS issues between 45,000 and 50,000 potentially life-saving warnings of severe weather.

Every day, millions of economic decisions influenced by the weather are made in agriculture, transportation, power, construction, and other sectors of the economy. Weather and flood conditions affect the entire economy in many direct and indirect ways. Better weather, hydrologic, and climate forecasts and information bring new economic opportunities to almost every sector of the economy. The NWS provides general data and products to private-sector meteorologists, who use this information to provide specialized services and tailored products to clients in the transportation sectors and other industries. NWS forecasts are critical to the commercial and private transportation sector, including airline shipping and trucking industries, nationally and internationally. Airlines rely on short-term forecasts to position their aircraft and adjust flight routes for economic advantage. Long-term climate forecasts help city managers manage more cost-effectively their purchases of resources such as salt and sand for roads and sidewalks. Hydrologic forecasts help communities protect their property by preparing for floods.

The NWS is making great strides in improving weather forecasts and warnings, with its vision of becoming America's "no surprise" weather service. Over the past five years, it has doubled the warning lead time for tornadoes to approximately 12 minutes. This extra warning time saves lives. Today's three-to-four day forecast is as accurate as the two day forecast was 15 years ago. The NWS is working now to make the 6 to 10 day forecast as accurate as the forecast for tomorrow. Products issued around the clock by the NWS affect the lives of every American. Important advances in the science of meteorology and hydrology, coupled with major new technological capabilities for observing and analyzing the atmosphere, will allow the NWS to continue providing unprecedented weather services to the nation, as it works in partnership with other federal entities, state and local governments, and emergency management officials to protect life and property throughout the United States.

## DEPARTMENT OF THE INTERIOR

**DOI Role** (Table F-5): The Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, and National Park Service manage large areas of land with roads and waterways. The U.S. Geological Survey and Bureau of Reclamation provide stream flow data to NWS River Forecast Centers for use in flood forecasting.

As the nation's principal conservation agency, the Department of the Interior (DOI) has responsibility for most of our nationally owned public lands and natural resources. These areas encompass nearly half a billion acres of federal lands, including the entire National Park System and vast tracts of federal lands, mostly in

the western regions of the country. Other DOI responsibilities include developing and using resources in an environmentally sound manner.

Within the DOI are a number of bureaus and offices with interests related to WIST. These include the Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, U.S. Geological Survey, and the National Park Service.

**Table F-5** Interests of DOI Constituencies in Transportation Sectors

Department of the Interior	Transportation Sectors of Constituencies					
	Road	Rail	MTS	Pipeline	Transit	Airport Ground Ops
Bureau of Indian Affairs	X	X	X	X	X	X
Bureau of Land Management	X	X	X	X	X	X
Bureau of Reclamation	X		X			
Fish and Wildlife Service	X		X		X	
National Park Service	X		X			
U.S. Geological Survey			X			

### Bureau of Indian Affairs

The Bureau of Indian Affairs was established in 1823 to carry out the nation's trust responsibilities for Native Americans. Today there are approximately 50,000 miles of road on Tribal lands. Indian Reservation Roads are public roads that provide access to and within Tribal reservations, trust land, restricted Tribal land, and Alaskan native villages. Approximately 25,000 miles of these roads are under the jurisdiction of the Bureau of Indian Affairs and the Tribal nations. Another 24,000 are owned by state or local governments.

### Bureau of Land Management

The Bureau of Land Management manages 266 million acres of federal land and 570 million acres of subsurface federal mineral resources. These public lands, most of which are in the western continental United States and Alaska, include grasslands, forests, mountains, arctic tundra, and desert lands. The Bureau manages a wide variety of resources and activities on these lands, including energy and minerals, timber, livestock forage, wild horse and burro populations, habitat for fish and wildlife, wilderness areas, and archaeological and historical sites. The

mission of the Bureau is to sustain the health, diversity, and productivity of these public lands for the use and enjoyment of present and future generations.

The Bureau of Land Management administers about 85,000 right-of-way authorizations on the public lands, including a variety of transportation-related systems for roads, railroads, and pipelines. It maintains and manages an additional 81,000 miles of roads for public use on the public lands. The Bureau of Land Management also administers 180,000 miles of rivers and streams on the public lands, including more than 2,000 miles of National Wild and Scenic River segments and 5,400 miles of floatable rivers for recreational use.

### **Bureau of Reclamation**

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner, in the interest of the American public. This includes programs, initiatives, and activities that will help the western states, Native American tribal nations, and others meet new water needs and balance the multitude of competing uses for water in the West. The Bureau of Reclamation has constructed more than 350 large dams and reservoirs in the 17 western states, including Hoover Dam on the Colorado River and Grand Coulee Dam on the Columbia River. Today, the Bureau is the largest wholesaler of water in the country and the second largest producer of hydroelectric power in the western United States.

### **Fish and Wildlife Service**

The Fish and Wildlife Service operates the National Wildlife Refuge System, which comprises more than 93 million acres in more than 570 National Wildlife Refuges and management districts. The refuge system stretches from Florida to Alaska and includes refuges in U.S. insular areas in the Caribbean and the Pacific. Every state and U.S. territory has at least one refuge or management district, and most major American cities are within an hour's drive of one. More than 30 million people visit components of the system each year.

Of the 10,000 miles of roadway in the National Wildlife Refuge System, approximately half is open to the public. The Fish and Wildlife Service also maintains 10,000 miles of dikes and 23,000 water control structures to maintain habitat. This roadway and waterway infrastructure is vulnerable to extremes in precipitation, particularly to tropical storms with extreme winds and storm surge.

### **National Park Service**

The mission of the National Park Service is to promote and regulate the use of the national parks in such a way as to conserve the scenery, natural and historic objects, and wildlife, leaving them unimpaired for the continued enjoyment, education, and inspiration of current and future generations. The National Park System of the United States comprises 384 areas covering more than 83 million acres in 49 states, the District of Columbia, American Samoa, Guam, Puerto Rico, Saipan, and the Virgin Islands. Since 1933 the National Park System has also included national monuments and many historic military sites and battlefields.

## U.S. Geological Survey

The U.S. Geological Survey (USGS) serves the nation as an independent fact-finding agency that collects, monitors, analyzes, and provides scientific understanding about natural resource conditions, issues, and problems. It is also the sole science agency for the DOI. USGS scientists pioneered hydrologic gauging techniques for estimating the discharge of water in rivers and streams and modeling the flow of complex ground-water systems.

The USGS has collected water-resources data at approximately 1.5 million sites across the United States, Puerto Rico, and Guam. The types of data collected are varied, but generally fit into the broad categories of surface water and ground water. Surface-water data, such as gauge height (stage) and streamflow (discharge), are collected at major rivers, lakes, and reservoirs. These data, along with data collected by the U.S. Army Corps of Engineers, are used by the NWS River Forecasting Centers to make critical flood forecasts throughout the nation.

## DEPARTMENT OF AGRICULTURE

**USDA Role** (Table F-6): The U.S. Forest Service manages large areas of land with roadways. The Farm Service Agency, through its Commodity Operations, must move agricultural commodities effectively domestically and worldwide.

The mission of the Department of Agriculture (USDA) is to enhance the quality of life for the American people by supporting production of agriculture; ensuring a safe, affordable, nutritious, and accessible food supply;

caring for agricultural, forest, and range lands; supporting sound development of rural communities; providing economic opportunities for farm and rural residents; expanding global markets for agricultural and forest products and services; and working to reduce hunger in America and throughout the world.

The U.S. agricultural sector is the largest user of freight transportation, accounting for nearly one-third of all freight transportation services in the United States. Because most agricultural production occurs in rural areas, a tremendous volume of transportation services is required to move it to market. As a result, transportation modes vary by commodity and by region.

**Table F-6** Interests of USDA Constituencies in Transportation Sectors

Department of Agriculture	Transportation Sectors of Constituencies					
	Road	Rail	MTS	Pipeline	Transit	Airport Ground Ops
Agricultural Marketing Service	X	X	X	X	X	X
Farm Service Agency	X	X	X	X	X	X
Forest Service	X	X	X	X	X	X
Office of the Chief Economist	X	X	X	X	X	X

Trucks are the primary movers of agricultural products, accounting for 45 percent of all commodity transport. Trucks are mainly used for short hauls and move virtually all agricultural

production from the field and farm to the first consolidation point, which may be a grain elevator, packing shed, or other facility. Among the agricultural commodities moved by truck are field crops, fresh fruits and vegetables, livestock, meats and poultry, dairy products, and canned goods.

Rail is the predominant transportation mode for long hauls in regions far from barge-loading locations. Railways transport 32 percent of agricultural products. They provide the only cost-effective transportation option for many agricultural shippers who are not located close to markets or river transportation. Field crops, grain mill products, fertilizers, and pesticides move by rail.

Barges, which account for 12 percent of agricultural transport, handle large volumes of field crops, fertilizer, and pesticides. They provide a low-cost means of moving fertilizer and other agricultural inputs to production regions, as well as to U.S. ports for export.

The remaining 11 percent of agricultural commodities are transported by pipelines, air freight, and other modes. Pipelines carry just under 30 percent of the movements of fertilizers and pesticides.

Climate and weather conditions affect seasonal demands for transportation of agricultural commodities. Weather affects barge movement more than any other mode of agricultural transportation. Factors such as freezing, flooding, and low water levels adversely affect the use of inland waterways.

### **Agricultural Marketing Service**

The Transportation and Marketing Program of the Agricultural Marketing Service brings together a unique combination of traffic managers, engineers, rural policy analysts, international trade specialists, and agricultural marketing specialists to help solve problems of U.S. and world agricultural transportation. The program's purpose is to ensure an efficient transportation system for rural America, beginning at the farm gate. This system moves agricultural and other rural products on the nation's highways, railroads, airports, and waterways and into the domestic and international marketplace. The program supplies research and technical information to producers, producer groups, shippers, exporters, rural communities, carriers, government agencies, and universities. The Agricultural Marketing Service publishes *Grain Transportation Prospects* and the *Grain Transportation Report*. The former provides a periodic assessment of the grain transportation situation and prospects for near-term grain transportation demand. This helps railroads, producers, shippers, and receivers anticipate changes in transportation supply and demand. The *Grain Transportation Report* provides information weekly on railcar loadings, rail deliveries to ports, ocean grain freight rates, and numbers of vessels in port, as well as the quantity of grain exported.

### **Farm Service Agency**

USDA's Farm Service Agency Commodity Operations handles the acquisition, procurement, storage, disposition, and distribution of agricultural commodities. It also administers the U.S. Warehouse Act. These activities help to achieve domestic farm program price support objectives,

produce a uniform regulatory system for the storage of agricultural products, and ensure the timely provision of food products for domestic and international food assistance programs and market development programs. The Farm Service Agency arranges for commercial ocean, ground (motor carrier and rail), and air transportation to deliver agricultural commodities domestically and worldwide.

### Forest Service

The Forest Service manages public lands in National Forests and National Grasslands. Its responsibilities include managing national forests for multiple uses and benefits and for the sustained yield of renewable resources such as water, forage, wildlife, wood, and recreation. The Forest Service sustains the health, diversity, and productivity of the 191 million acres of forest and grassland under its care. These areas provide multiple benefits to the country, from traditional commodities such as timber, range, forage, and minerals, to opportunities for recreation. The Forest Service also provides natural resource management guidance and assistance to state and private landowners in both rural and urban environments.

### Office of the Chief Economist

The Office of the Chief Economist advises the Secretary of Agriculture on the economic implications of policies and programs affecting the U.S. food and fiber system and rural areas. This office also oversees the activities of the World Agricultural Outlook Board and the Global Climate Change Office, among other departmental activities. The World Agricultural Outlook Board approves the *Grain Transportation Prospects* report (see description under Agricultural Marketing Service).

## OTHER FEDERAL ENTITIES

The transportation sectors of interests to the constituencies of five additional federal entities are summarized in Table F-7.

**Table F-7** Interests in WIST Transportation Sectors of Constituencies for Other Federal Entities

Federal Entity	Transportation Sectors of Constituencies					
	Road	Rail	MTS	Pipeline	Transit	Airport Ground Ops
Environmental Protection Agency	X		X			
Federal Emergency Management Agency	X	X	X			
National Aeronautics and Space Administration	X	X	X			
Nuclear Regulatory Commission	X	X	X			
U.S. Postal Service	X	X	X			

### Environmental Protection Agency

The mission of the U.S. Environmental Protection Agency (EPA) is to protect human health and safeguard the natural environment—air, water, and land—upon which life depends. The EPA ensures that environmental protection is an integral consideration in U.S. policies concerning

natural resources, human health, economic growth, energy, transportation, agriculture, industry, and international trade. The EPA also ensures that human health and safeguarding the environment are considered in establishing environmental policy.

Air quality is a major responsibility for the EPA. Coming from many different sources, air pollution threatens health, damages the environment, and causes haze that reduces visibility in urban areas, wilderness areas, and national parks. Under the Clean Air Act, EPA sets limits on how much of a pollutant is allowed in the air anywhere in the United States.

Water is essential for life, and pollution of water has a serious impact on all living creatures. Water pollution can negatively affect the use of water for drinking, household needs, recreation, fishing, transportation, and commerce. The EPA enforces federal clean water and safe drinking water laws, provides support for municipal wastewater treatment plants, and takes part in pollution prevention efforts aimed at protecting watersheds and sources of drinking water. It carries out both regulatory and voluntary programs to fulfill its mission to protect the nation's waters.

An example of EPA's role in establishing environmental policy is the collaborative process for transporting nuclear waste from weapons production facilities to a deep earth disposal site in New Mexico. Initially, the EPA certified that the DOE site in New Mexico meets standards to protect public health and the environment from the harmful effects of radiation exposure and contamination. This EPA decision allows DOE to begin disposing of radioactive waste in the site once all other applicable health and safety standards have been met.

Next, the DOT is responsible for working with individual states to establish the surface routes that will be used to transport waste to the disposal site. Then the NRC regulates the transportation of nuclear waste, including the safety of the containers used to transport waste to the disposal site.

The New Mexico Environment Department is responsible for issuing and enforcing waste disposal permits relating to the type of waste to be disposed of at this site. The New Mexico Radioactive Waste Task Force administers the state's safe transportation program for the site. Finally, the DOE is responsible for developing the site and its day-to-day management.

## **Federal Emergency Management Agency**

Since its founding in 1979, the mission of the Federal Emergency Management Agency (FEMA) has been to reduce loss of life and property and protect our nation's critical infrastructure from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response, and recovery. FEMA is an independent agency of the federal government, reporting to the President. Two primary areas of FEMA responsibility with implications for WIST are evacuation management and response to nuclear, biological or chemical (including hazardous materials, or HAZMAT) incidents. Evacuation management includes the movement of people and resources such as emergency equipment and relief supplies in response to major catastrophic events such as earthquakes, flooding, fires, and hurricanes. Response to nuclear, biological, or chemical events includes evacuation of people and care for

victims. To respond effectively to these events, FEMA incorporates atmospheric transport and diffusion information into emergency decision-making processes.

## **National Aeronautics and Space Administration**

The missions of the National Aeronautics and Space Administration (NASA) are to advance and communicate scientific knowledge and understanding of the Earth, the solar system, and the universe; to use the environment of space for research; to explore, use, and enable the development of space for human and robotic endeavors in science and commerce; and to research, develop, verify, and transfer advanced aeronautics, space, and related technologies.

### **Goddard Space Flight Center**

Goddard Space Flight Center is one of nine field centers operated by NASA. One of this center's many responsibilities is the safe and efficient movement of spacecraft, vehicles, and equipment between Goddard and other facilities, especially the launch facilities. The most prevalent mode of transportation is by truck from the center to either the final destination or an aerial port, such as Andrews Air Force Base, where the cargo can be air shipped. Transportation operations at Goddard are highly dependent on weather conditions, and adverse conditions may delay or cancel an activity (see the Roadway and Marine Transportation System WIST Templates).

### **Kennedy Space Center**

The John F. Kennedy Space Center is NASA's Spaceport Technology Center and the center for launch and payload processing systems. It is also NASA's lead center for acquisition and management of expendable launch vehicle services and payload carriers. Located at Cape Canaveral Spaceport in Florida, this NASA center manages the checkout, launch, and landing of the Space Shuttles and their payloads. It is also the starting point of all U.S. human space flights.

### **Stennis Space Center**

The John C. Stennis Space Center is NASA's center for rocket propulsion testing and Earth science applications. It is NASA's primary center for testing and flight-certifying rocket propulsion systems for the Space Shuttle Program and future generations of space vehicles. The Stennis Space Center also provides substantial support in remote sensing, which is valuable for remote observation of weather and related conditions relevant to WIST user needs.

## **Nuclear Regulatory Commission**

The Nuclear Regulatory Commission (NRC) is an independent agency whose mission is to ensure adequate protection of the public health and safety, the common defense and security, and the environment by regulating the use of nuclear materials. In addition to regulating nuclear energy facilities and radioactive materials in the United States, the NRC regulates the transport, storage, and disposal of nuclear materials and nuclear wastes. It authorizes the use, transportation, and storage of spent nuclear fuel after determining that the proposed activities are consistent with the regulatory framework and level of risk.

From a transportation perspective, the NRC approves the packaging designs for high activity radioactive materials and spent nuclear fuel. It also approves the quality assurance programs for use of these packages. It coordinates and develops guidance with other U.S. government and international agencies on storage and transportation policy and safety issues. When necessary, the NRC provides technical support for incident and emergency response.

## **U.S. Postal Service**

The mission of the Postal Service is to bind the nation together through the correspondence of the people, provide access in all communities, and offer prompt, reliable postal services at uniform prices. Postal services are an essential government function, one that has been integral to building the nation. The delivery of postal services has supported development of national transportation and communication infrastructures. It has linked urban and rural economies and has led to the creation of the country's physical address system. Transportation responsibilities of the Postal Service range from long-haul interstate movements to local delivery. An observation made at the WIST II Symposium is that the nationwide daily distribution of Postal Service vehicles provides an excellent opportunity to use them as mobile meteorological sensing platforms dispersed throughout the nations highway and road systems.